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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/632,856

08/04/2003

Toshio Okochi

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3447

24956

7590

05/26/2006

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.  
1800 DIAGONAL ROAD  
SUITE 370  
ALEXANDRIA, VA 22314

EXAMINER

MIRZA, ADNAN M

ART UNIT

PAPER NUMBER

2145

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/632,856

Applicant(s)

OKOCHI ET AL.

Examiner

Adnan M. Mirza

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/04/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>08/04/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandberg (U.S. 5,522,045) and further in view of Rodman (U.S. 5,87,610).

As per claims 1,6 Sandberg disclosed a multiprocessor system having a plurality of nodes, each node including at least one CPU, at least one Translation Look aside Buffer (TLB), each associated with a respective Central Processing Unit (CPU), and a local main memory forming a part of a main memory space of the multiprocessor system, and an inter-node network, each of the nodes further comprising: a map table having entries corresponding to respective physical pages of said local main memory and storing correspondence between each physical page number of said physical pages and a virtual page number actually mapped to each physical page number (col. 6, lines 26-65); checking means for checking for coincidence between a first virtual page number which is included in a received network transaction and a second virtual page number obtained through reference to said map table using a physical address included in the received memory access transaction; and main memory access means for executing an access to said local main memory corresponding to said received network transaction when said first and second virtual page numbers are coincident (col. 15, lines 15-43).

However Sandberg did not disclose in detail, “network transaction generating means for generating, when a result of an address translation using a TLB indicates that a memory access request from a CPU is to be directed to a local main memory of another node, a network transaction corresponding to said memory access request which includes a physical address to be accessed obtained from said result of the address translation using the TLB and a virtual page number designated in said memory access request from the CPU; transaction receiving means for receiving network transactions transferred from other nodes”.

In the same field of endeavor Rodman disclosed, the address translation system of the invention initially polls a “lookaside” buffer for a translation of the virtual address to a physical address location in main memory. If a translation is found, it may be used to verify cached data and, if verified the data may be retrieved from the cache and used immediately (col. 5, lines 41-49). When the address is polled, the buffer yields the physical translation (and remaining eleven bits of the virtual address are used for confirmation (col. 5, lines 8-10).

It would have been obvious to having one ordinary skill in the art at the time of the invention was made to have incorporated the address translation system of the invention initially polls a “lookaside” buffer for a translation of the virtual address to a physical address location in main memory. If a translation is found, it may be used to verify cached data and, if verified the data may be retrieved from the cache and used immediately (col. 5, lines 41-49). When the address is polled, the buffer yields the physical translation (and remaining eleven bits of the virtual address

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are used for confirmation as taught by Rodman in the method and system of Sandberg to provide virtually shared mapping through a widely distributed network and to provide dynamic reconfiguration capabilities to an existing network.

3. As per claims 2,7 Sandberg-Rodman disclosed wherein said map table stores a plurality of virtual pages mapped to a physical page (Sandberg, col. 11, lines 18-36).

4. As per claims 3,8 Sandberg-Rodman disclosed wherein said map table further stores information indicating whether the mapping between a virtual page and a physical page is valid or not (Sandberg, col. 11, lines 18-36).

5. As per claims 4,9 Sandberg-Rodman disclosed wherein said map table is mapped to a part of a memory space of said multiprocessor system (Sandberg, col. 11, lines 18-36).

6. As per claims 5,10 Sandberg-Rodman disclosed wherein each node further includes means for selecting physical page numbers in said map table in which a mapped virtual page is stored, among all physical pages of said main memory (col. 15, lines 15-43).

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*Conclusion*

7. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Adnan Mirza whose telephone number is (571)-272-3885.

8. The examiner can normally be reached on Monday to Friday during normal business hours. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on (571)-272-3933. The fax for this group is (703)-746-7239. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866)-217-9197 (toll-free).

AM

Adnan Mirza

Examiner

  
JASON CARDONE  
SUPERVISORY PATENT EXAMINER